



# Air and Waste Matters

DNREC Division of Air and Waste Management

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## Boiler Safety's Mission—Keeping Our Citizens Safe

One of the challenges in government is that after you get a problem under control through regulation and inspections, people wonder why tax money is needed for what no longer seems to be a problem.

Boiler safety is a classic example. "Our success is our downfall," summarized John Esch of Delaware's Boiler Safety Division, alluding to the lack of adequate funding to keep the program strong.

In the early years of the industrial revolution, nobody wondered about the importance of boiler safety. During the 1850s, explosions were occurring at the rate of almost one every four days in the United States. The worst boiler disaster in history occurred in 1865 when a boiler explosion aboard the Mississippi River steamer *Sultana*, took more than 1,200 lives, all soldiers returning from prison camp.

Some dismissed these incidences as "acts of God." But, it gave birth to professional boiler safety inspectors, who have made accidents extremely rare. Today, the Division of Boiler Safety continues that legacy of excellence in safety.

Many people do not realize the potential danger in operating boilers and pressure vessels.

Most do not know that their home water heater is a pressure vessel, and if using hot-water radiant heat, their furnace boiler is one, too. Although residential pressure vessels are not regulated by the state, proper maintenance by competent service personnel is important, as these and other pressure vessels can explode putting families, homes, and businesses at risk.

The Division of Boiler Safety's mission is to promote public safety through inspections of boilers and pressure vessels, and provide education on the operation, maintenance and repair of boilers and pressure vessels in the State of Delaware. It's good to put safety first in the First State!

Article by J. Harlan, DBS and J. Werner, DAWM



"Fire and Ice" Air Cannon — Boiler Safety Performs Inspections at Annual Punkin Chunkin Event

## “Punkin Chunkin” with Boiler Safety



Punkin Chunkin Trophy

**P**unkin Chunkin may have started off as a garage-tinkering, goodtime weekend 22 years ago, but as anyone who has been there lately knows, it has morphed into a serious event with serious contenders operating very serious equipment.

Enter Jim Harlan, Delaware's Boiler Safety Director, who takes boiler safety mighty seriously, with the credentials to prove it. After a career keeping nuclear-power aircraft carriers and submarines safe for the US Navy, Jim has been keeping Delawareans safe for over 16 years.

Barely concealed beneath his professional demeanor is Jim's wry wit. He will be the first to joke that he is the only *official* Director of BS at the Department. And when it comes to Punkin Chunkin, he definitely has heard a lot of BS!

Punkin Chunkin came under Boiler Safety's jurisdiction four years ago, when the Division became concerned about the pressure vessels used for the air cannons. Jim Harlan thought everything was working out well when an air cannon owner called to ask for a hydrostatic test of his cannon. This was the first year that Boiler Safety did the inspections and when they arrived, they found that unfortunately, the cannon did not meet the new requirements. The owner was told that he could not use it at the event.

However, the owner then asked if they would witness the hydrostatic test. This involved filling the pressure vessel with water and raising the pressure to the allowable working pressure. They agreed to witness the test, even though the cannon could not be operated at the event. What they did not realize was that the owner was

using compressed air to raise the pressure. While cold water under pressure does not pose a great explosion hazard, compressed air is very dangerous.

When the owner closed the air valve, he failed to realize he had 1200 pounds per square inch (psi) of pressure in the vessel! They had all started walking away thinking that the test was over, but barely got 10 feet away when a ½-inch “O” ring failed. The sound of 1200 psi escaping from a pressure vessel is alarmingly similar to a high caliber rifle going off, or worse — an explosion. Harlan said, “We all thought we were goners—kind of a sad way for the Director of Boiler Safety to go!” Luckily, there was no damage done, except perhaps to a few undergarments.

Although you might not expect it, from the very first year that Boiler Safety started inspecting the cannons, the cannon owners have been thanking them for making Punkin Chunkin a much safer weekend. And that's what it's all about for Boiler Safety.

*Article by J. Harlan, DBS and C. Wirtz, DAWM*



**PVC Barrel on Air Cannon Ruptures due to effects of Air Pressure and Pumpkin — No Injuries**

## Scary Tales from the Inspectors

**C**obweb-covered dirt floors, snake skins and rat skeletons strewn about in dark corners—sounds more like the makings of a good haunted house for Halloween! However, that's just part of the territory that comes with the job of DNREC Boiler Safety inspector. No desk job for these guys, no siree. When inspecting boilers, they always seem to find themselves in undesirable spaces in some very dirty places.

John Esch, an inspector with the Division of Boiler Safety, has been inspecting boilers for over 15 years. He says he has seen it all — but sometimes, not too well. The lights in the basement areas of most older buildings usually do not work. The fans, if there are fans, do not have covers or grounds, and on occasion, there has been sewage leaking into the crawl spaces that house the pressure vessels. "I always look very closely when the lights are out to make sure there are no eyes looking back at me!"

Bob Whitman uses his extensive experience—32 years working for DuPont and four with the Division, to provide careful review of pressure vessel systems. He spent three days reviewing the air cannons at Punkin Chunkin, as some of

the competitors try to beat the system. He had one competitor try to hold down the relief valve stem while it was going off!

"You don't want to defeat the relief valve," he warns. "Remember the *Myth Busters* television show episode where they removed the relief valve from a water heater and it took off like a rocket, 500 feet into the air?" Unfortunately, accidents can and do happen, but not on the Division of Boiler Safety's watch.

Article by C. Wirtz, DAWM



**Cast Iron Boiler Explosion at School in Pennsylvania  
No Injuries — Accident Occurred on a Sunday**

### Delaware Law: What is a "Boiler" or "Pressure Vessel?"

A **Boiler** is a closed vessel in which water is heated, steam is generated, steam is superheated, or any combination thereof, under pressure or vacuum for use externally, by the direct application of heat. The heat can be from the combustion of fuels, or from electricity or nuclear energy. The term "boiler" includes fired units for heating or vaporizing liquids other than water, where these units are separate from processing systems, and are complete within themselves. Boilers can be used for numerous applications such as heating a building, processing steam or making hot water, or for the supply and storage of hot or cold potable water. A water heater is considered a boiler.

A **Pressure Vessel** is a container for the containment of pressure, either internal or external. The pressure may be obtained from an external source or by the application of heat from a direct or indirect source, or any combination thereof. Pressure vessels can be found almost everywhere including automobile dealers, repair garages, machine shops, schools and colleges and chemical plants and refineries. Several types of pressure vessels are: carbon dioxide storage cylinders; oxygen, nitrogen, anhydrous ammonia tanks and receivers; Freon receivers; and air receivers.

For more information on Boiler Safety, please call Boiler Safety Director James Harlan at (302) 744-2735 or visit: <http://www.dnrec.state.de.us/boilersafety/>



## Free Bike Transport Program at the Beach

**D**id you know that between 2,500 to 4,000 international workers arrive in Delaware's resort area each summer for employment opportunities? These workers are in need of convenient, economical green transportation. What's better than a bicycle? A free bike!

The Transportation Management Association of Delaware (TMA) has been instrumental in addressing this transportation problem for the past two years. In conjunction with the Lewes-Rehoboth Association of Churches (LRAC)-International Student Workers Committee, the Rehoboth Beach-Dewey Beach Chamber of Commerce, and the Delaware Department of Transportation (DelDOT), the TMA has distributed over 200 bikes to employees in need of transportation.

The TMA developed the Free Bike program in Rehoboth Beach. The TMA obtained a \$5,000 grant in 2006 from Delaware River and Bay Authority to support distribution of free used bicycles to students working in the resort area. For many of the students, bicycles are their only means of transportation.

The grant was used to purchase confiscated and/or discarded bikes from the University of Delaware and City of Newark security departments. Prior to this program, the university and the city annually auctioned the bikes, however, both organizations enthusiastically agreed to support the program by merely charging \$20 per bicycle, regardless of the condition.

Minor repairs to the bikes were handled by TMA staff and volunteers; more extensive maintenance needed to be addressed by professionals at a local bike shop. Thankfully, the bike shop only charged for the parts they used and donated their time to the cause as well. Once the repairs were completed, the bikes were also equipped with safety devices. The bikes were then distrib-

uted at LRAC events, at which time cyclists were given bike safety information from DelDOT.

The number of bikes distributed increased from 60 in 2006, to 150 bikes during the summer of 2007, with \$5,000 in funding from another grant from the Delaware River and Bay Authority. DNREC supported the 2008 program with \$7,500 in grant money from DNREC's Community Involvement Advisory Committee (CIAC) Environmental Project Fund, increasing the program to over 200 bicycles distributed during the summer of 2008.

At the conclusion of the resort season, employees return their bikes at a DelDOT or LRAC event. The bicycles are refurbished and stored in a bunker at DNREC's Cape Henlopen State Park during the winter for inclusion in the next year's program.

In addition to helping to improve air quality in the area, a recent report by DelDOT indicates that bike crashes were reduced by 1/3 since the program was implemented. The TMA believes that the comprehensive program of bicycle training, bicycle safety education and bicycle maintenance has contributed toward improving bike safety in the area.

*Article by S. Doordan, TMA*



**Students Receive Free Bikes at LRAC Event**

## New Destiny for Urban Heat Islands in Wilmington

**W**hy are cities hotter in the summer? Anyone who has walked down an asphalt or paved road in the summer knows that the paving absorbs the sun's rays and radiates heat. Plus, there are fewer trees and green spaces to cool the air. Tall buildings and narrow streets also trap hot air and reduce air flow. Waste heat from vehicles, industry, and air conditioners add warmth to the surroundings. All contributing to what is called the "urban heat island effect."

The Delaware Center for Horticulture (DCH), and project partners, DNREC's Air Quality Management Section (AQM) and the Delaware Department of Agriculture Forest Service (Delaware Forest Service), received a grant from DNREC's Community Involvement Advisory Council to mitigate the impacts of urban heat islands in Wilmington.

The urban heat island effect can impact communities by increasing energy demand for suppliers and energy costs for consumers; increasing air pollution levels of ozone, nitrogen oxides, sulfuric oxides, and particulates; and causing heat-related illness and mortality, particularly in vulnerable populations such as the city's elderly residents and children.

There are many ways to mitigate the impact of urban heat islands: planting trees; reducing amounts of impervious surface to encourage evaporative cooling and lessen the amount of heat-trapping material; and using lighter, reflective pervious paving surfaces.

The recently completed Urban Forest Effects (UFORE) study for the city of Wilmington, along with the current city tree inventory and new software technology, are providing a more refined analysis of the urban forest, and are assisting in determining the most strategic locations to plant trees in the city.



**Planting Area at New Destiny Fellowship Lot**

With this in mind, a site was identified in northeast Wilmington where there was both a need to implement best management practices to reduce the summertime surface and air temperatures and to encourage stormwater recharge. The project site is a parking lot owned by Bethel Temple Community Development Corporation on 16<sup>th</sup> Street. The lot is used by members of the New Destiny Fellowship.

Approximately 2,700 square feet of pervious planting areas and 29 trees were planted at the New Destiny Fellowship lot. The trees were planted along the perimeters and throughout the parking lot to maximize shade and cool the air, remove pollutants, and absorb stormwater runoff. Completion of the project, in combination with future projects anticipated for the area, will significantly help reduce the urban heat island effect in Wilmington. For more information on the project, please visit:

[http://www.dehort.org/whatwedo/landscapes\\_HIMP.php](http://www.dehort.org/whatwedo/landscapes_HIMP.php)

*Article by T. Brixen, AQM and Chris Canning, DCH*

## Recycle Those Falling Leaves!

It's that time of year again, when those "falling leaves that drift past your window" end up as enormous heaps of red and gold in your yard! In Northern New Castle County, the Cherry Island Landfill ban prohibits all yard waste materials including leaves from entering the landfill. So what is an ordinary resident to do?

If you have not already discovered the wonders of composting, it is not too late to take a class. Hetty E. Francke, Master Gardener/Master Composter at the University of Delaware's Cooperative Extension Office, is offering a free introductory class on November 1, 2008 at Brandywine Creek State Park. To pre-register, please contact Sheila Linn at (302) 577-3534 or by email: [sheila.linn@state.de.us](mailto:sheila.linn@state.de.us). For more information on the class, please contact Francke by e-mail at: [hettyw@udel.edu](mailto:hettyw@udel.edu).

In addition, Francke has built four compost demonstration sites in Delaware with the support of volunteer groups. These sites demonstrate six ways to practice environmentally friendly composting. Signs provide information on each of the six units, and a nearby brochure box holds additional information about composting. The demonstration sites are located at:

- **Bellevue State Park**, Wilmington, New Castle County;
- **Behind the Candlelight Theater**, Ardentown, New Castle County;
- **Killens Pond State Park**, Felton, Kent County; and
- **Trap Pond State Park**, Laurel, Sussex County.

In addition to composting, residents could also dispose of yard waste by dropping it off at one of DNREC's free community yard waste drop-off sites. The three sites are ready to take all plant materials resulting from residential lawn maintenance and landscaping activities including leaves and turn it into fabulous free landscape mulch.

The sites are open every Friday, Saturday and Sunday from 8:30 a.m. until 4:30 p.m. and are for use by New Castle County residents only. Commercial businesses, such as landscaping and lawn care companies, as well as municipalities use other means for recycling large quantities of yard waste. Only loose material can be left; plastic bags and other containers must be emptied and removed from the site. The locations of the three yard waste sites are as follows:

- **Brandywine Hundred Community Yard Waste Site** — on Cauffiel Parkway near Philadelphia Pike (Business Route 13);
- **DART Mid-County Community Yard Waste Site** — southwest corner of U.S. Rt. 13 and Rt. 72 near Bear; and
- **Polly Drummond Hill Community Yard Waste Demonstration Site** — on Polly Drummond Hill Road, ½ mile north of Kirkwood Highway and directly across from the Judge Morris Estate.

Other alternative methods for yard waste disposal include using a mulching mower or having it hauled away by a private hauler, landscaper, or the Delaware Solid Waste Authority for recycling; or taking it to one of the commercial facilities available in New Castle County. For more information on recycling alternatives, please visit: <http://www.dnrec.delaware.gov/yardwaste/Pages/Default.aspx>.

*Article by W. Miller, SHWMB and C. Wirtz, DAWM*



**Holly and Josh Rittberg Happily Composting!**



## Open Burning Restrictions in Delaware



**Prohibited Trash Burning**

**F**rom the beginning of October through the end of April, homeowners, land managers and farmers are allowed limited open burning activities under Air Quality Management Regulation 1113 on Open Burning.

Although the burning of trash and leaves is always prohibited, some activities are permissible, subject to size restrictions not to exceed

27 cubic feet of material (3 x 3 x 3 feet). Limiting these activities will minimize the negative impacts on air quality.

During the fall, winter and spring months, permissible open burning activities include:

- Recreational or ceremonial fires such as barbeques, campfires and fires for scouting activities.
- Domestic burning of small amounts of yard waste and garden waste generated from a residential property owner.
- Some types of burning of vegetation from a farm, an orchard, nursery, tree farm or other agricultural land.
- Burning of vegetation for improving wildlife habitat, invasive species management, and other forest and natural area management.
- Live fire training exercises conducted by authorized Fire Companies such as the demolition of structures and instructional events conducted by the Delaware Fire School.

For more information on open burning restrictions, please visit: <http://www.awm.delaware.gov/Info/Pages/OpenBurningMain.aspx>.

*Article by V. Gray and T. Postell, AQM*

## New Enforcement Officer Named “Outstanding Recruit” by DE Police Chiefs’ Council



**DNREC Secretary John A. Hughes Congratulates Environmental Protection Officer Terrence Knight on his Outstanding Recruit Award**

**M**any congratulations to Environmental Protection Officer Terrence Knight on receiving the Delaware Police Chiefs’ Council Outstanding Recruit Award.

Officer Knight recently graduated from the Delaware State Police Training Academy. The award is presented to the graduate in each Academy class who displays the highest qualities of leadership.

Officer Knight was sworn in a few weeks ago as a DNREC Environmental Protection Officer with the Division of Air and Waste Management’s Environmental Crimes Unit.

**DELAWARE  
DEPARTMENT OF  
NATURAL  
RESOURCES AND  
ENVIRONMENTAL  
CONTROL**

Secretary John A. Hughes  
Deputy Sec. David Small

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We're on the web!  
[www.awm.delaware.gov](http://www.awm.delaware.gov)

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Restoration Branch  
Brownfields Website**

**at:**

[http://  
www.dnrec.state.de.us/  
dnrec2000/Divisions/  
AWM/sirb/  
brownfield.asp](http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/sirb/brownfield.asp)

**for more Brownfields  
information.**



The Division of Air and Waste Management oversees the handling, transferring and storing of solid and hazardous materials by regulating, monitoring, inspecting, enforcing and responding to emergencies. The Division also implements the state's air monitoring, permitting and compliance programs. The Division's responsibilities include administering air and waste programs including:

- Delaware's Air Quality Section — air monitoring and regulating air emissions.
- Tank Management Branch — maintenance and installation of underground and above ground storage tanks & overseeing cleanup of tanks which may leak.
- Emergency Prevention and Response Branch — preventing industrial accidents, assuring emergency planning and community right-to-know, and responding to environmental emergencies.
- Environmental Crimes Unit — the Enforcement Officers enforce the state's air, waste and water pollution laws, and participate on DNREC's Environmental Response Team by responding to environmental emergencies.
- Site Investigation and Restoration Branch — remediation of sites contaminated by hazardous substances (Superfund/Brownfields/Voluntary Cleanup Program).
- Solid and Hazardous Waste Management Branch — reuse, recycling, transport and disposal of solid and hazardous waste.

## EASY REFERENCE PHONE NUMBERS

24-Hour Report and Spill Notification Line - 1-800-662-8802  
Aboveground Storage Tanks - 302-395-2500  
Air Quality - Dover Office - 302-739-9402  
- New Castle Office - 302-323-4542  
Asbestos - New Castle - 302-323-4542  
- Kent & Sussex - 302-739-9402  
Boiler Safety - 302-744-2735  
Brownfields - 302-395-2600  
Emergency Prevention and Response - 302-739-9404  
Environmental Crimes Unit - 302-739-9401 or 1-800-662-8802  
Hazardous Waste - 302-739-9403  
Medical Waste - 302-739-9403  
Open Burning - 302-739-9402  
Outreach Ombudsman - 302-395-2515  
Recycling - 302-739-9403  
Site Investigation & Restoration Branch (Superfund/Brownfields) - 302-395-2600  
Small Business Ombudsman - 302-739-9909  
Solid Waste - 302-739-9403  
Underground Storage Tanks - 302-395-2500

## DID YOU KNOW?

The Division's Emergency Response Team participated in a table top exercise (TTE) with the US Coast Guard in Philadelphia at the end of August. The scenario was a large discharge from a vessel with a cracked hull in the lower Delaware Bay. The event focused on "Preparedness Through Partnership" with exercises that included issues such as the use of volunteers, the liaison function in the incident command organizational structure, and the Delaware Bay Port of Safe Refuge issue — if and when a leaking vessel should be brought into an anchorage area or port in the bay for repair.